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Patent Application for:

DECRYPTION SYSTEM

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DECRYPTION SYSTEM

CROSS REFERENCE TO RELATED DOCUMENTS

This application is related to the following copending patent applications which are hereby incorporated herein by reference:

S/N 10/038,217 filed January 2, 2002,
S/N 10/038,032 filed January 2, 2002,
S/N 10/037,914 filed January 2, 2002,
S/N 10/037,499 filed January 2, 2002,
S/N 10/037,498 filed January 2, 2002,
S/N 10/084,106 filed February 2, 2002,
S/N 10/273,905 filed October 18, 2002,
S/N 10/273,903 filed October 18, 2002,
S/N 10/273,875 filed October 18, 2002,
S/N 10/274,084 filed October 18, 2002,
S/N 10/273,904 filed October 18, 2002,
S/N 10/274,019 filed October 18, 2002,
S/N 10/293,761 filed November 13, 2002,
S/N 10/303,594 filed November 25, 2002,
S/N 10/319,133 filed December 13, 2002,
S/N 10/319,066 filed December 13, 2002,
S/N 10/318,782 filed December 13, 2002,
S/N 10/319,169 filed December 13, 2002,
S/N 10/391,940 filed March 19, 2003,
S/N 10/393,324 filed March 20, 2003.

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BACKGROUND

Selective encryption systems, including but not limited to dual or multiple selective encryption systems are disclosed in the above-referenced patent applications. Such systems are useful in providing encryption of program material under multiple conditional access systems.

The above-referenced commonly owned patent applications describe inventions relating to various aspects of methods generally referred to herein as partial encryption or selective encryption. More particularly, systems are described therein wherein selected portions of a particular selection of digital content are encrypted using two (or more) encryption techniques while other portions of the content are left unencrypted. By properly selecting the portions to be encrypted, the content can effectively be encrypted for use under multiple decryption systems without the necessity of encryption of the entire selection of content. In some embodiments, only a few percent of data overhead is needed to effectively encrypt the content using multiple encryption systems. This results in a cable or satellite system being able to utilize Set-top boxes or other implementations of conditional access (CA) receivers from multiple manufacturers in a single system - thus freeing the cable or satellite company to competitively shop for providers of Set-top boxes.

BRIEF DESCRIPTION OF THE DRAWINGS

Certain illustrative embodiments of the invention illustrating organization and method of operation, together with objects and advantages thereof, may be best

1 understood by reference detailed description that follows taken in conjunction with
2 the accompanying drawings in which:

3 **FIGURE 1** is a diagram depicting a dual selectively encrypted data stream
4 consistent with certain embodiments of the present invention.

5 **FIGURE 2** is a block diagram of a decoding system consistent with certain
6 embodiments of the present invention.

7 **FIGURE 3** is a drawing depicting another embodiment of a dual selectively
8 encrypted data stream consistent with certain embodiments of the present
9 invention.

10 **FIGURE 4** is a block diagram of another embodiment of a decoding system
11 consistent with certain embodiments of the present invention.

12 **FIGURE 5** is another embodiment of a decoder system consistent with
13 certain embodiments of the present invention.

14 **FIGURE 6** is a block diagram of a system for generating a stream or file of
15 clear packets in a manner consistent with certain embodiments of the present
16 invention.

17 **FIGURE 7** is a diagram showing another arrangement of clear packets that
18 can be used in certain embodiments consistent with of the present invention.

19 **FIGURE 8** is a flow chart of a decoding method consistent with certain
20 embodiments of the present invention.

21 **FIGURE 9** is a flow chart of a clear packet generation method consistent
22 with certain embodiments of the present invention.

23 **FIGURE 10** is a block diagram of a decoding system consistent with certain
24 embodiments of the present invention.

25 **FIGURE 11** is a block diagram of another decoding system consistent with
26 certain embodiments of the present invention.

27 **FIGURE 12** is a block diagram of another decoding system consistent with
28 certain embodiments of the present invention.

1 **FIGURE 13** is a flow chart of a method for providing clear packet data in a
2 manner consistent with certain embodiments of the present invention.
3

4 **DETAILED DESCRIPTION**

5 While this invention is susceptible of embodiment in many different forms,
6 there is shown in the drawings and will herein be described in detail specific
7 embodiments, with the understanding that the present disclosure of such
8 embodiments is to be considered as an example of the principles of the invention
9 and not intended to limit the invention to the specific embodiments shown and
10 described. In the description below, like reference numerals are used to describe
11 the same, similar or corresponding parts in the several views of the drawings.

12 The terms "a" or "an", as used herein, are defined as one or more than one.
13 The term "plurality", as used herein, is defined as two or more than two. The term
14 "another", as used herein, is defined as at least a second or more. The terms
15 "including" and/or "having", as used herein, are defined as comprising (i.e., open
16 language). The term "coupled", as used herein, is defined as connected, although
17 not necessarily directly, and not necessarily mechanically. The term "program", as
18 used herein, is defined as a sequence of instructions designed for execution on a
19 computer system. A "program", or "computer program", may include a subroutine,
20 a function, a procedure, an object method, an object implementation, in an
21 executable application, an applet, a servlet, a source code, an object code, a
22 shared library / dynamic load library and/or other sequence of instructions designed
23 for execution on a computer system.

24 The terms "scramble" and "encrypt" and variations thereof are used
25 synonymously herein. Also, the term "television program" and similar terms can
26 be interpreted in the normal conversational sense, as well as a meaning wherein
27 the term means any segment of A/V content that can be displayed on a television
28 set or similar monitor device. The term "video" is often used herein to embrace not
29 only true visual information, but also in the conversational sense (e.g., "video tape

1 recorder") to embrace not only video signals but associated audio and data. The
2 term "legacy" as used herein refers to existing technology used for existing cable
3 and satellite systems. The exemplary embodiments disclosed herein are decoded
4 by a television Set-Top Box (STB), but it is contemplated that such technology will
5 soon be incorporated within television receivers of all types whether housed in a
6 separate enclosure alone or in conjunction with recording and/or playback
7 equipment or Conditional Access (CA) decryption module or within a television set
8 itself. The present document generally uses the example of a "dual partial
9 encryption" embodiment, but those skilled in the art will recognize that the present
10 invention can be utilized to realize multiple partial encryption without departing from
11 the invention. Partial encryption and selective encryption are used synonymously
12 herein.

13 The selective encryption processes described in the above patent
14 applications utilize any suitable encryption method. However, these encryption
15 techniques are selectively applied to the data stream, rather than encrypting the
16 entire data stream, using techniques described in the above-referenced patent
17 applications. In general, but without the intent to be limiting, the selective
18 encryption process utilizes intelligent selection of information to encrypt so that the
19 entire program does not have to undergo dual encryption. By appropriate selection
20 of data to encrypt, the program material can be effectively scrambled and hidden
21 from those who desire to hack into the system and illegally recover commercial
22 content without paying. MPEG (or similar format) data that are used to represent
23 the audio and video data does so using a high degree of reliance on the
24 redundancy of information from frame to frame. Certain data can be transmitted
25 as "anchor" data representing chrominance and luminance data. That data is then
26 often simply moved about the screen to generate subsequent frames by sending
27 motion vectors that describe the movement of the block. Changes in the
28 chrominance and luminance data are also encoded as changes rather than a
29 recoding of absolute anchor data. Thus, encryption of this anchor data, for
30 example, or other key data can effectively render the video un-viewable.

1 In accordance with certain embodiments consistent with the above
2 inventions, the selected video data to be encrypted may be any individual one or
3 combination of the following (described in greater detail in the above applications):
4 video slice headers appearing in an active region of a video frame, data
5 representing an active region of a video frame, data in a star pattern within the
6 video frame, data representing scene changes, I Frame packets, packets
7 containing motion vectors in a first P frame following an I Frame, packets having
8 an intra_slice_flag indicator set, packets having an intra_slice indicator set, packets
9 containing an intra_coded macroblock, data for a slice containing an intra_coded
10 macroblock, data from a first macroblock following the video slice header, packets
11 containing video slice headers, anchor data, and P Frame data for progressively
12 refreshed video data, data arranged in vertical and or horizontal moat patterns on
13 the video frame, and any other selected data that renders the video and/or audio
14 difficult to utilize. Several such techniques as well as others are disclosed in the
15 above-referenced patent applications, any of which (or other techniques) can be
16 utilized with the present invention to encrypt only a portion of the content.

17 In order to distinguish between the two or more digital television signals
18 encrypted using the multiple encryption algorithms in accordance with certain
19 embodiments consistent with the above inventions, multiple packet identifiers
20 (PIPs) are utilized. This is illustrated in the dual selectively encrypted data stream
21 shown in **FIGURE 1** as data stream 100. Normally a single set of packet identifiers
22 is used to identify a data stream associated with a particular television program.
23 When a television signal or other content is encrypted under the multiple selective
24 encryption arrangement described in the above-referenced applications, the clear
25 content shown as packets 104 is assigned a first set of PIDs (PID A), and each set
26 of encrypted content is assigned another set of PIDs. In this example, one set of
27 encrypted content shown as packets 108 encrypted under a first conditional access
28 (CA) encryption system (CA system X) may share the same PID (PID A) with the
29 unencrypted content, but this should not be considered limiting. CA system X may,
30 for example represent a so called “legacy” encryption system. A second set of

1 encrypted content shown as packets 112 is encrypted under a second CA
2 encryption system (CA system Y) and encoded with a second PID (PID B). In this
3 example, consecutive packets 108 and 112 contain the same content encrypted
4 under two different CA systems.

5 Turning now to **FIGURE 2**, a device 120 is depicted in which a source of
6 clear packets 124 is utilized to provide a set of clear packets from a selectively
7 encrypted stream of packets. In this exemplary embodiment, a selectively
8 encrypted data stream such as 100 is received as an input (e.g., through a tuner
9 and a receiver device forming a part of a television Set-Top Box (STB) or other video
10 receiver system. The stream of selectively encrypted data is processed by a PID
11 filter 128 which selects, for example, the stream of data represented by values of
12 PID equal to PID A in stream 100. In this example, the output of the PID filter 128
13 would have only packets identified by PID A. This stream of data having only PID
14 A is buffered in a buffer memory 132 in certain embodiments before being provided
15 to a packet substitution circuit 136. Packet substitution circuit 136 also receives
16 an input from the source of clear or decrypted packets 124, which may be buffered
17 at buffer memory 140.

18 In accord with certain embodiments, the source of clear or decrypted
19 packets 124 may be a magnetic, optical or magneto-optical or semiconductor
20 storage device, for example, a CD ROM (Compact Disc Read Only Memory) or a
21 hard disk drive or an Flash ROM. In other embodiments, the source of clear or
22 decrypted packets may be a remote source that streams or otherwise transmits the
23 clear or decrypted packets over a network such as the Internet. Such packets may
24 be transmitted over either a wideband or a dial-up connection.

25 In this example, the source of clear packets may be encoded with PID B or
26 some other PID to identify the packets. Such clear or decrypted packets having
27 PID B are provided to the packet substituter 136 where they are inserted into place
28 in the data stream containing PID A packets by a packet inserter 144. The packets
29 should preferably be inserted at a position adjacent the encrypted packets with PID
30 A. Thus, at the output of packet inserter 144 a data stream similar to that of

1 **FIGURE 1** appears except that the packets 112 having PID B are now in the clear
2 rather than being encrypted.

3 From here, the stream can be converted to a clear data stream by detecting
4 the encrypted packets with PID A at encrypted packet detector 148 and discarding
5 those packets at 152. Since encrypted packets can contain a flag bit that indicates
6 that the packet is encrypted, the process of detecting and discarding the encrypted
7 packets is a simple matter of reading the encryption flag and discarding all
8 encrypted packets. At this point, the data stream contains packets with PID A
9 which are clear and Packets with PID B which are also clear. In order to use
10 certain standard decoders (e.g., an MPEG decoder), such as 160, it may be
11 desirable that all packets in a particular elementary stream have the same PID.
12 Thus, at 156, the packets having PID B can be re-mapped to have PID A. This
13 produces a clear data stream with all packets having PID A and all packets being
14 unencrypted. In other embodiments, decoder 160 can be programmed to accept
15 multiple PIDs in the same data stream. This process can be carried out in a circuit
16 120 without need for a decryptor since no decryption actually takes place at the
17 device 120.

18 It will be appreciated by one skilled in the art upon consideration of the
19 present teaching that other configurations of data in the selectively encrypted data
20 stream can be decoded using the same, similar or analogous circuitry. One
21 example of another configuration of a selectively encrypted data stream is depicted
22 in **FIGURE 3** as data stream 200. In this exemplary embodiment, the selectively
23 encrypted packets 108 having PID A encrypted under CA system X and the
24 selectively encrypted packets 112 having PID B encrypted under CA system Y are
25 combined with clear packets 204 having PID C.

26 In this embodiment, the data stream may be processed using the circuit 218
27 of **FIGURE 4**, the incoming selectively encrypted data stream can be processed by
28 a PID re-mapping circuit 220 to convert the PID C packets to PID A (or equivalently,
29 the PID A packets can be converted to PID B, both can be mapped to another PID,

1 or other mappings can be used). In this example, the re-mapped stream from 220
2 is then passed to a PID filter 128 that in this case is configured to throw away
3 packets except those having PID A. Thus, the PID B packets are discarded at PID
4 filter 128.

5 The packets from PID filter 128 can be buffered at a buffer memory 132 and
6 then provided to the packet substituter 236. The source of clear or decrypted
7 packets 124 can provide packets to a PID re-mapper 240 that re-maps the PID of
8 the clear packets to PID A. The PID re-mapper 240's output can be buffered by
9 buffer 140 and then provided to the packet inserter 144 of packet substituter 236.
10 Packet inserter 144 then inserts the clear PID A packets into the data stream so
11 that all packets now have PID A and the only remaining task is to remove the
12 encrypted packets as before at 148 and 152 (e.g., by PID filtering). In other
13 embodiments, equivalently, the encrypted packets can remain in place if ignored
14 by the decoder 160.

15 In another embodiment, the PID re-mapper 220 of **FIGURE 4** may be omitted
16 as can the PID filter 128. In this example, clear packets from 124 may also not
17 require remapping at 240. In order to effect the packet substitution, the clear
18 packets from 124 are inserted into the data stream adjacent the encrypted packets
19 and the encrypted packets can be removed using PID filtering if the encrypted
20 packets have different PID values from the clear packets. If not, the encrypted flag
21 can be used to identify and delete the encrypted packets. Other variations will
22 occur to those skilled in the art. Preferably, at the output of the packet substituter,
23 all PIDs wind up the same when provided to the decoder 160. However, this is not
24 an absolute requirement if the decoder can deal with multiple PID values for a
25 single elementary data stream.

26 It should be clear to those skilled in the art upon consideration of this
27 teaching that the particular PID assignments used in a particular selectively
28 encrypted data stream as well as the PID assignments for the clear data from 120
29 is not particularly important as long as they can be determined in a manner that
30 permits the desired substitution, and in some instances, remapping to a single PID

1 value for decoding. Thus, any suitable PID mapping can be used without departing
2 from certain embodiments consistent with the present invention.

3 The various systems described above can be generically represented by the
4 block diagram of circuit 320 of **FIGURE 5** in which a single or multiple selectively
5 encrypted data stream is processed by a packet substituter 336 in which a source
6 of clear packets 124 provides clear packets which are substituted for the encrypted
7 packets in the input data stream. This produces a stream of clear packets that can
8 be decoded by a suitable decoder 160. Thus, an apparatus for manipulating a
9 selectively encrypted data stream in a manner consistent with certain embodiments
10 has a filter that selects a set of packets from the selectively encrypted data stream
11 based upon packet identifier values to produce a stream of packets having clear
12 packets and encrypted packets. A packet substituter inserts a clear version of the
13 encrypted packets into the stream of packets in place of the encrypted packets to
14 produce a stream of clear data.

15 The above-referenced systems and processes use a source of clear packets
16 that can be either supplied as a data stream or computer file, etc. from the original
17 source of the content (or subsequent processor), or can be generated by decryption
18 of selectively encrypted content. **FIGURE 6** depicts one exemplary system that can
19 act as source 124 of the decrypted packets. In this system, the selectively
20 encrypted data stream such as 100 is provided as an input. The system first
21 identifies one of the two sets of encrypted packets to decrypt. In this case, this is
22 easily accomplished using a PID B filter 350 to select the packets encrypted under
23 the encryption process defined by conditional access system Y. (In other
24 embodiments, packets could be selected by selecting encrypted packets with PID
25 A.) These packets are then decrypted using CA decryption system 354 to produce
26 a set of packets that are decrypted. This set of packets represents only one set of
27 the encrypted packets, and thus is much smaller generally than the entire content
28 represented by the selectively encrypted data stream. This set of packets can then
29 be stored as a computer file on a computer readable storage medium 358 and / or

1 transmitted using a transmitting device such as a broadband or narrowband
2 modem 362 to a remote location where the decoding of the selectively encrypted
3 data stream is to take place. In some cases, the storage medium can be, for
4 example, an optical disk or a magnetic disk or semiconductor storage device.
5 Such devices can then either be directly distributed to an end user or used as a
6 source for later transmission, e.g., over the Internet.

7 Therefore, an apparatus for supplying decrypted packets for substitution in
8 place of encrypted packets in a selectively encrypted data stream in a manner
9 consistent with certain embodiments has an encrypted packet detector that detects
10 a set of encrypted packets in the selectively encrypted data stream and discards
11 packets in the data stream that are not encrypted. A decrypter decrypts the set of
12 encrypted packets in the selectively encrypted data stream to produce a set of
13 decrypted clear packets, wherein the decrypted clear packets can be substituted
14 for the encrypted packets in the selectively encrypted data stream.

15 In another embodiment, a file or stream of data packets 368 as depicted in
16 **FIGURE 7** can be utilized. In this embodiment, when the decrypter 354 of **FIGURE**
17 6 decrypts the encrypted packets, they are stored along with the encrypted packets
18 at a position adjacent one or more of the encrypted packets. In this example, the
19 packets 108 with PID A encrypted under CA system X are followed by a packet 112
20 containing identical data except encrypted under CA system Y and having PID B.
21 These packets are then followed by a clear packet 370 containing the decrypted
22 version of the packet's payload, which may have any selected PID (shown as PID
23 F). This arrangement can be modified in the order of presentation of the packets
24 or can only, for example contain one of the encrypted versions of the packets.
25 (either 108 or 112) in other exemplary embodiments. This file or data stream can
26 then be sent to the decoding device. In this embodiment, the selectively encrypted
27 data stream can be easily modified by matching one or both of packets 108 and
28 112 to the packets in the original data stream. The placement of the clear packets

1 370 (in this case, immediately following the encrypted packets) identifies the
2 packets that can be substituted for the encrypted packets.

3 Any of the above decoding techniques can be implemented in a television
4 STB that has had software modifications to facilitate the operation as described.
5 Also, the above techniques can be implemented in any suitable video player device
6 including, but not limited to, a personal computing device or television receiver.

7 The basic decoding processes just described can be carried out by the
8 process 400 shown in **FIGURE 8** starting at 402. At 406 a selectively encrypted
9 data stream is received and a set of clear packets is received at 410. The clear
10 packets can be received and stored prior to receipt of the selectively encrypted data
11 stream, or the process can occur substantially simultaneously. At 414, the clear
12 packets are substituted for the encrypted packets in the selectively encrypted data
13 stream to produce a clear data stream. This clear data stream can then be
14 decoded and played at 418. The process ends at 422 after the last substitution and
15 decoding has taken place.

16 Thus, a method of decoding a selectively encrypted data stream consistent
17 with certain embodiments involves receiving the selectively encrypted data stream
18 from a first source; receiving a set of clear packets from a second source, the set
19 of clear packets containing data representing an unencrypted version of the
20 encrypted packets present in the selectively data stream; detecting a plurality of
21 encrypted packets forming a part of the selectively encrypted data stream; and
22 substituting the clear packets for the encrypted packets to form a clear data stream.

23 One process described above for creation of the file or data stream
24 containing the clear data stream is depicted as process 430 of **FIGURE 9** starting
25 at 434. A file or data stream of the selectively encrypted content is received at 438
26 and is decrypted using an appropriate decrypter to produce a set of clear packets
27 corresponding to the encrypted packets originally appearing in the selectively
28 encrypted content at 442. This set of clear packets is then stored and/or
29 transmitted to another decoding device at 446 and the process ends at 450.

1 Thus, a method of generating a set of clear packets consistent with certain
2 embodiments involves receiving a selectively encrypted stream of data; detecting
3 encrypted packets within the selectively encrypted stream of data; creating a set
4 of clear packets by decrypting the encrypted packets detected within the selectively
5 encrypted stream of data. Additionally, a method of facilitating decoding of a
6 selectively encrypted data stream involves creating a set of clear packets
7 corresponding to a set of encrypted packets present in the selectively encrypted
8 data stream; and providing the set of clear packets to a decoder for substitution in
9 place of the set of encrypted packets present in the selectively encrypted data
10 stream.

11 The decoding mechanism previously described can be realized in many
12 ways to decode programming from, for example, a cable television or satellite
13 television network. By way of example, and not limitation, **FIGURES 10 - 12** depict
14 several overall systems in which certain embodiments of the present invention can
15 be utilized to decode selectively encrypted content. In **FIGURE 10**, a cable
16 television system headend 504 transmits content that is selectively encrypted
17 through cable network 508 to a television Set-Top Box 512 for decoding. In order
18 to decode the content, a source of clear packets 124 corresponding to a set of the
19 selectively encrypted packets transmits the clear packets via, for example, the
20 Internet 516 or electronic mail to the STB 512's internal modem. The STB 512
21 software then implements a decoding process such as one of the exemplary
22 processes previously described.

23 A similar process can be used to decode the selectively encrypted content
24 in the system depicted in **FIGURE 11**, except that in this exemplary embodiment,
25 the clear packets are received, e.g., by virtue of a subscription service, in the form
26 of a computer readable storage medium such as a Compact Disc (CD) or Digital
27 Versatile Disc (DVD) 520. In other embodiments, the clear packets could equally
28 well be supplied in the form of semiconductor storage devices or any other suitable
29 computer readable storage medium. The storage medium is played in a suitable

1 player 524 in order to access the clear packets. The clear packets are thus
2 supplied to STB 512 which operates in a manner similar to that previously
3 described except that the source of clear packets is different.

4 A similar process can be used to decode the selectively encrypted content
5 in the system depicted in **FIGURE 12**, except that in this exemplary embodiment,
6 the clear packets are received, e.g., by virtue of a subscription service, by any
7 suitable mechanism and stored on a hard disc drive or similar device 530. The
8 clear packets can be received in any manner and retrieved as needed from the disc
9 drive 530. The clear packets are thus supplied to STB 512 which operates in a
10 manner similar to that previously described except that the source of clear packets
11 is different.

12 Thus, a data signal for use in decoding a selectively encrypted data stream,
13 can have a collection of unencrypted data packets corresponding to a set of
14 encrypted data packets, the encrypted data packets forming one set of selectively
15 encrypted packets that represent an encrypted part of the selectively encrypted data
16 stream. Another data signal can have a selectively encrypted data stream in which
17 a set of encrypted packets have been removed and replaced by a set of decrypted
18 packets, wherein the decrypted packets are obtained from a separate source.
19 Either of these data signals can be transmitted or stored in a computer readable
20 storage medium.

21 A subscription service can operate according to a method for decoding
22 selectively encrypted content in a manner consistent with process 550 of **FIGURE**
23 **13** starting at 554 which involves generating a set of decrypted data packets at 558
24 corresponding to a set of encrypted data packets appearing in the selectively
25 encrypted content by decryption of the set of encrypted data packets; obtaining a
26 fee from a purchaser at 562; and delivering the set of unencrypted data packets to
27 the purchaser at 566. The process then stops at 570.

28 While the above descriptions presume that a television STB is used as the
29 playback device for a cable or satellite broadcast, this should not be considered

1 limiting. The playback device could equally well be equivalently built into a
2 television receiver of any sort or may form a part of a personal computing device
3 without limitation. Moreover, although the preferred embodiment utilizes a cable
4 television or satellite television system as the source of selectively encrypted
5 content, other sources such as packaged media could equivalently be decoded in
6 this manner.

7 The source of clear packets can provide such clear packets as a
8 subscription service wherein the subscriber purchases, leases or otherwise obtains
9 a STB or personal computing device with appropriate software or installs suitable
10 programming on a commercially available STB or other playback device. In
11 exchange for subscription fees, the user can then obtain copies of the clear packets
12 from the source of clear packets 124 by email or download to the STB 512, and can
13 subsequently decode the encrypted programming.

14 Those skilled in the art will recognize, upon consideration of the above
15 teachings, that certain of the above exemplary embodiments are based upon use
16 of a programmed processor. However, the invention is not limited to such
17 exemplary embodiments, since other embodiments could be implemented using
18 hardware component equivalents such as special purpose hardware and/or
19 dedicated processors which are equivalents. Similarly, general purpose
20 computers, microprocessor based computers, micro-controllers, optical computers,
21 analog computers, dedicated processors, application specific circuits and/or
22 dedicated hard wired logic may be used to construct alternative equivalent
23 embodiments.

24 Those skilled in the art will appreciate, upon consideration of the above
25 teachings, that the program operations and processes and associated clear packet
26 data used to implement certain of the embodiments described above can be
27 implemented using streaming data as well as disc storage and other forms of
28 computer readable storage such as for example Read Only Memory (ROM)
29 devices, Random Access Memory (RAM) devices, network memory devices,
30 optical storage elements, magnetic storage elements, magneto-optical storage

1 elements, flash memory, core memory and/or other equivalent volatile and non-
2 volatile storage technologies without departing from certain embodiments of the
3 present invention. Such alternative storage devices should be considered
4 equivalents.

5 While the embodiments above are illustrated using a dual selectively
6 encrypted data stream, single or multiple encrypted data streams can equally well
7 be decoded in the manner taught.

8 Certain embodiments described herein, are or may be implemented using
9 a programmed processor executing programming instructions that are broadly
10 described above in flow chart form that can be stored on any suitable electronic or
11 computer readable storage medium and / or can be transmitted over any suitable
12 electronic communication medium. However, those skilled in the art will
13 appreciate, upon consideration of the present teaching, that the processes
14 described above can be implemented in any number of variations and in many
15 suitable programming languages without departing from embodiments of the
16 present invention. For example, the order of certain operations carried out can
17 often be varied, additional operations can be added or operations can be deleted
18 without departing from certain embodiments of the invention. Error trapping can
19 be added and/or enhanced and variations can be made in user interface and
20 information presentation without departing from certain embodiments of the present
21 invention. Such variations are contemplated and considered equivalent.

22 While certain illustrative embodiments of the invention have been described,
23 it is evident that many alternatives, modifications, permutations and variations will
24 become apparent to those skilled in the art in light of the foregoing description.
25 Accordingly, it is intended that the present invention embrace all such alternatives,
26 modifications and variations as fall within the scope of the appended claims.

27 What is claimed is:
28
29